

Genus or species specific detection of bacteria - by hybridising RNA with labelled specific probe after elongation in presence of specific or general primer

Patent Assignee: BOEHRINGER MANNHEIM GMBH; ROCHE DIAGNOSTICS GMBH

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Patent Family (11 patents, 17 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
EP 480289	A	19920415	EP 1991116745	A	19911001	199216	B
DE 4038804	A	19920416	DE 4032024	A	19901009	199217	E
			DE 4038804	A	19901205		
CA 2052668	A	19920410	CA 2052668	A	19911002	199226	E
ZA 199108024	A	19920729	ZA 19918024	A	19911008	199235	E
JP 4258299	A	19920914	JP 1991257519	A	19911004	199243	E
JP 1994040839	B2	19940601	JP 1991257519	A	19911004	199420	E
EP 480289	B1	19970312	EP 1991116745	A	19911001	199715	E
DE 59108610	G	19970417	DE 59108610	A	19911001	199721	E
			EP 1991116745	A	19911001		
ES 2101706	T3	19970716	EP 1991116745	A	19911001	199735	E
CA 2052668	C	20001219	CA 2052668	A	19911002	200103	E
US 6225094	B1	20010501	US 1991772026	A	19911008	200126	E
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Priority Application Number (Number Kind Date): DE 4032024 A 19901009; DE 4038804 A 19901205

Patent Details

Patent Number	Kind	Language	Pages	Drawings	Filing Notes
EP 480289	A	DE	9	0	
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DE 4038804	A	DE	5		
CA 2052668	A	EN			
ZA 199108024	A	EN	47		
JP 4258299	A	JA	6		
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Regional Designated States, Original	AT BE CH DE DK ES FR GB GR IT LI LU NL SE				
DE 59108610	G	DE			Application EP

			1991116745
			Based on OPI patent EP 480289
ES 2101706	T3	ES	Application EP 1991116745
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CA 2052668	C	EN	
US 6225094	B1	EN	Continuation of application US 1991772026

Alerting Abstract: EP A

Genus and/or species specific detection of bacteria in test fluids comprises (1) hybridising bacterial RNA with a primer (I) which is (a) complementary to a genus/species specific region of RNA of certain bacteria, or to a highly conserved region of RNA of bacteria in general, but (b) at its 3'-end is not complementary to RNA of bacteria of other genera or species. (2) elongating the primer in presence of a polymerase and the 4 deoxyribonucleotides, opt with simultaneous or subsequent labelling of the elongation product (EP). (3) denaturing EP and hybridising with a genus/species specific oligonucleotide (II), then (4) detecting hybridisation from the label.

(I) is pref. complementary to RNA of one genus only and (II) will hybridise with RNA of only particular species within that genus. (I) and (II) are derived from r-, m- or t-RNA and can carry different labels.

Polymerisation is pref. with AMV or MMuLV reverse transcriptase, and before hybridisation with (II) EP are sepd. according to size by gel electrophoresis or ascending TLC. The label in EP may be one member of a specific binding pair, with the other partner being bound to a solid phase. Hybridisation with (II) is then done on this phase.

USE/ADVANTAGE - Method can distinguish between RNA differing in only a few bases. (I) and (II) provide two selection stages, so the danger of false assignments is reduced. Method is used e.g. to differentiate between harmful and harmless species

International Classification (Main): C12P-019/34, C12Q, C12Q-001/68 **(Additional/Secondary):** G01N, G01N-033/68

US Classification, Issued: 435091510, 435091200, 435091100, 435006000

Original Publication Data by Authority

Canada

Publication Number: CA 2052668 A (Update 199226 E)

Publication Date: 19920410

Assignee: BOEHRINGER MANNHEIM GMBH (BOEF)

Inventor: LUDWIG W SCHLEIFER K H KESSLER C RUEGER R STERN A

Language: EN

Application: CA 2052668 A 19911002 (Local application)

Priority: DE 4032024 A 19901009 DE 4038804 A 19901205

Original IPC: C12Q-1/68(A)

Current IPC: C12Q-1/68(A)|CA 2052668 C (Update 200103 E)

Publication Date: 20001219

Assignee: ROCHE DIAGNOSTICS GMBH (HOFF)

Inventor: LUDWIG W SCHLEIFER K KESSLER C RUEGER R STERN A

Language: EN

Application: CA 2052668 A 19911002 (Local application)

Priority: DE 4032024 A 19901009 DE 4038804 A 19901205

Original IPC: C12Q-1/68(A)

Current IPC: C12Q-1/68(A)

Germany

Publication Number: DE 4038804 A (Update 199217 E)

Publication Date: 19920416

****Verfahren zur genus- oder/und spezies-spezifischen Detektion von Bakterien in einer Probenflüssigkeit****

Assignee: Boehringer Mannheim GmbH, 6800 Mannheim, DE (BOEF)

Inventor: Ludwig, Wolfgang, Dr.rer.nat., 8179 Sachsenkamm, DE Schleifer, Karl-Heinz, Prof. Dr., 8044

Unterschleissheim, DE Kessler, Christoph, Dr.rer.nat., 8021 Dorfen, DE Rueger, Ruediger, Dr.med., 8124 Seeshaupt,

DE Stern, Anne, Dr.rer.nat., 8122 Penzberg, DE

Language: DE (5 pages)

Application: DE 4032024 A 19901009 DE 4038804 A 19901205 (Local application)

Original IPC: C12Q-1/68(B) G01N-33/68(B)

Current IPC: C12Q-1/68(B) G01N-33/68(B)

Claim: * 1. Verfahren zur genus- oder/und spezies-spezifischen Detektion von Bakterien in einer Probenflüssigkeit,

****dadurch gekennzeichnet,**** dass man bakterielle RNA mit einem Primer, der zu einer genus- bzw. spezies-spezifischen Region von RNA bestimmter Bakterien oder einer hochkonservierten Region der RNA von Bakterien allgemein komplementär ist, an seinem 3prime-Ende jedoch nicht komplementär ist zur RNA von Bakterien anderer Gattung bzw. Spezies, hybridisiert, Elongation des Primers in Anwesenheit einer geeigneten Polymerase und den vier Desoxyribonukleotiden, gegebenenfalls mit gleichzeitiger oder anschließender Markierung des Elongationsproduktes, bewirkt und ein gebildetes Elongationsprodukt nach Denaturierung mit einem genus- bzw. spezies-spezifischen Oligonukleotid hybridisiert und die Hybridisierung über die Markierung des Oligonukleotids nachweist. [DE 59108610 G (Update 199721 E)]

Publication Date: 19970417

Assignee: BOEHRINGER MANNHEIM GMBH (BOEF)

Inventor: LUDWIG W SCHLEIFER K KESSLER C RUEGER R STERN A

Language: DE

Application: DE 591086 10 A 19911001 (Local application) EP 1991116745 A 19911001 (Application)

Priority: DE 4032024 A 19901009 DE 4038804 A 19901205

Related Publication: EP 480289 A (Based on OPI patent)

Original IPC: C12Q-1/68(A)

Current IPC: C12Q-1/68(A)

European Patent Office

Publication Number: EP 480289 A (Update 199216 B)

Publication Date: 19920415

****Verfahren zur Genus- oder/und Spezies-spezifischen Detektion von Bakterien in einer Probenflüssigkeit Methode for genus or/and species-specific detection of bacteria in a testliquid Methode de detection specifique de genre ou/et d'espece de bacteries dans un liquide a prober****

Assignee: BOEHRINGER MANNHEIM GMBH, Sandhofer Strasse 116, W-6800 Mannheim 31, DE (BOEF)

Inventor: Ludwig, Wolfgang, Dr. rer. nat., Alpenblickstrasse 8, W-8179 Sachsenkamm, DE Schleifer, Karl-Heinz, Prof.

Dr., Schwalbenstrasse 3a, W-8044 Unterschleissheim, DE Kessler, Christoph, Dr.rer.nat., Schlossbergweg 11, W-8021

Dorfen, DE RUEGER R Stern, Anne, Dr. rer. nat., Karwendelstrasse 10, W-8122 Penzberg, DE

Language: DE (9 pages, 0 drawings)

Application: EP 1991116745 A 19911001 (Local application)

Priority: DE 4032024 A 19901009 DE 4038804 A 19901205

Designated States: (Regional Original) AT BE CH DE DK ES FR GB GR IT LI LU NL SE

Original IPC: C12Q-1/68

Current IPC: C12Q-1/68

Original Abstract: For the genus- and/or species-specific detection of bacteria in a sample liquid, bacterial RNA is hybridised with a primer which is generally complementary to a genus- or species-specific region of RNA of certain bacteria or a highly conserved region of the RNA of bacteria but is not complementary at its 3' end to the RNA of bacteria of other genus or species, the primer is elongated in the presence of a suitable polymerase and the four deoxyribonucleotides, where appropriate with simultaneous or subsequent labelling of the elongation product, an

elongation product which has formed is after denaturation hybridised with a genus- or species-specific oligonucleotide, and the hybridisation is detected via the labelling of the oligonucleotide.

Claim: * 1. Verfahren zur Genus- oder/und Spezies-spezifischen Detektion von Bakterien in einer Probenflüssigkeit, dadurch gekennzeichnet, dass man bakterielle RNA mit einem Primer, der zu einer genus- bzw. spezies-spezifischen Region von RNA bestimmter Bakterien oder einer hochkonservierten Region der RNA von Bakterien allgemein komplementär ist, an seinem 3'-Ende jedoch nicht komplementär ist zur RNA von Bakterien anderer Gattung bzw. Spezies, hybridisiert, Elongation des Primers in Anwesenheit einer geeigneten Polymerase und den vier Desoxyribonukleotiden, gegebenenfalls mit gleichzeitiger oder anschließender Markierung des Elongationsproduktes, bewirkt und ein gebildetes Elongationsprodukt nach Denaturierung mit einem Genus- bzw. Spezies-spezifischen Oligonukleotid hybridisiert und die Hybridisierung über die Markierung des Oligonukleotids nachweist. li |EP 480289 B1 (Update 199715 E)

Publication Date: 1997 0312

Verfahren zur genus- und spezies-spezifischen Detektion von Bakterien in einer Probenflüssigkeit Method for genus and species-specific detection of bacteria in a testliquid Methode de detection spécifique de genre et d'espece de bacteries dans un liquide a prober

Assignee: BOEHRINGER MANNHEIM GMBH, 68298 Mannheim, DE (BOEF)

Inventor: Ludwig, Wolfgang, Dr. rer. nat., Alpenblickstrasse 8, W-8179 Sachsenkamm, DE Schleifer, Karl-Heinz, Prof. Dr., Schwalbenstrasse 3a, W-8044 Unterschleißheim, DE Kessler, Christoph, Dr.rer.nat., Schlossbergweg 11, W-8021 Dornfen, DE Rueger, Ruediger, Dr. med., Tutzingener Strasse 2, W-8124 Seeshaupt, DE Stern, Anne, Dr. rer. nat., Karwendelstrasse 10, W-8122 Penberg, DE

Language: DE (9 pages, 0 drawings)

Application: EP 1991116745 A 19 911001 (Local application)

Priority: DE 4032024 A 19901009 DE 4038804 A 19901205

Designated States: (Regional Original) AT BE CH DE DK ES FR G B GR IT LI LU NL SE

Original IPC: C12Q-1/68(A)

Current IPC: C12Q-1/68(A)

Claim: 1. Verfahren zur genus- und spezies-spezifischen Detektion von Bakterien in einer Probenflüssigkeit, mit den Schritten - bakterielle RNA wird mit einem Primer, der zu einer genus-spezifischen Region von RNA bestimmter Bakterien oder einer hochkonservierten Region der RNA von Bakterien allgemein komplementär ist, an seinem 3'-Ende jedoch nicht komplementär ist zur RNA von Bakterien anderer Gattung hybridisiert, - Elongation des Primers in Anwesenheit einer geeigneten Polymerase und den vier Desoxyribonukleotiden, gegebenenfalls mit gleichzeitiger oder anschließender Markierung des Elongationsproduktes, - ein gebildetes Elongationsprodukt wird nach Denaturierung mit einem spezies-spezifischen Oligonukleotid hybridisiert, * - die Hybridisierung wird über die Markierung des Oligonukleotids nachgewiesen. 1. Method for the genus-specific and species-specific detection of bacteria in a sample liquid comprising the steps - bacterial RNA is hybridized with a primer which is complementary to a genus-specific region of the RNA of particular bacteria or to a highly conserved region of the RNA of bacteria in general, but which is not complementary at its 3' end to the RNA of bacteria of another genus, - the primer is elongated in the presence of a suitable polymerase and the four deoxyribonucleotides, if desired, with a concurrent or subsequent labelling of the elongation product, - an elongation product formed is hybridized with a species specific oligonucleotide after denaturation, * - the hybridization is detected by means of the oligonucleotide label.

Spain

Publication Number: ES 2101706 T3 (Update 199735 E)

Publication Date: 19970716

Assignee: BOEHRINGER MANNHEIM GMBH (BOEF)

Language: ES

Application: EP 1991116745 A 19911001 (Application)

Priority: DE 4032024 A 19901009 DE 4038804 A 19901205

Related Publication: EP 480289 A (Based on OPI patent)

Original IPC: C12Q-1/68(A)

Current IPC: C12Q-1/68(A)

Japan

Publication Number: JP 4258299 A (Update 199243 E)

Publication Date: 19920914

Assignee: BOEHRINGER MANNHEIM GMBH (BOEF)

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Application: JP 1991257519 A 19911004 (Local application)
Priority: DE 4032024 A 19901009 DE 4038804 A 19901205
Original IPC: C12Q-1/68(A)
Current IPC: C12Q-1/68(A)|JP 1994040839 B2 (Update 199420 E)
Publication Date: 19940601
Assignee: BOEHRINGER MANNHEIM GMBH (BOEF)
Inventor: LUDWIG W SCHLEIFER K H KESSLER C RUGER R STERN A
Language: JA (6 pages)
Application: JP 1991257519 A 19911004 (Local application)
Priority: DE 4032024 A 19901009 DE 4038804 A 19901205
Related Publication: JP 04258299 A (Based on OPI patent)
Original IPC: C12Q-1/68(A)
Current IPC: C12Q-1/68(A)

United States

Publication Number: US 6225094 B1 (Update 200126 E)
Publication Date: 20010501
Method for the genus-specific or/and species-specific detection of bacteria in a sample liquid.
Assignee: Roche Diagnostics GmbH, Mannheim, DE (HOFF)
Inventor: Ludwig, Wolfgang, Sachsenkam, DE Schleifer, Karl-Heinz, Unterschleissheim, DE Kessler, Christoph, Dorfen, DE Rueger, Ruediger, Seeshaupt, DE Stern, Anne, Penzberg, DE
Agent: Arent Fox Kintner Plotkin Kahn, PLLC
Language: EN
Application: US 1991772026 A 19911008 (Continuation of application) US 199373985 A 19930608 (Local application)
Priority: DE 4032024 A 19901009 DE 4038804 A 19901205
Original IPC: C12P-19/34(A) C12Q-1/68(B)
Current IPC: C12P-19/34(A) C12Q-1/68(B)
Original US Class (main): 43591.51
Original US Class (secondary): 43591.2 43591.1 4356
Original Abstract: For the genus-specific or/and species-specific detection of bacteria in a sample liquid, bacterial RNA is hybridized with a primer which is complementary to a genus-specific or species-specific region of the RNA of particular bacteria or to a highly conserved region of the RNA of bacteria in general, but which is not complementary at its 3prime end to the RNA of bacteria of another genus or species, the primer is elongated in the presence of a suitable polymerase and the four deoxyribonucleotides, if desired, with a concurrent or subsequent labelling of the elongation product and an elongation product formed is hybridized with a genus-specific or species-specific oligonucleotide after denaturation and the hybridization is detected by means of the oligonucleotide label.
Claim: 1. A method for genus-specific and/or species-specific detection of bacteria in a sample liquid comprising the steps of: * a) hybridizing bacterial RNA with a primer which is complementary to a genus-specific region of RNA of a particular bacteria wherein the primer is not complementary at its 3prime end to RNA of bacteria from another genus, * b) elongating said primer in the presence of a suitable polymerase and deoxyribonucleotides to form an elongation product, * c) hybridizing said elongation product after denaturation with a labeled oligonucleotide which is specific for a particular species within a genus of bacteria, and * d) detecting any hybridization by means of the labeled oligonucleotide.

South Africa

Publication Number: ZA 199108024 A (Update 199235 E)
Publication Date: 19920729
Assignee: BOEHRINGER MANNHEIM GMBH (BOEF)
Inventor: KESSLER C RUEGER R SEIBL R KRUSE-MUELLER C BERNER S
Language: EN (47 pages)
Application: ZA 19918024 A 19911008 (Local application)
Priority: DE 4032024 A 19901009
Original IPC: C12Q-0/00(A) G01N-0/00(B)
Current IPC: C12Q-0/00(A) G01N-0/00(B)

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